

Flight

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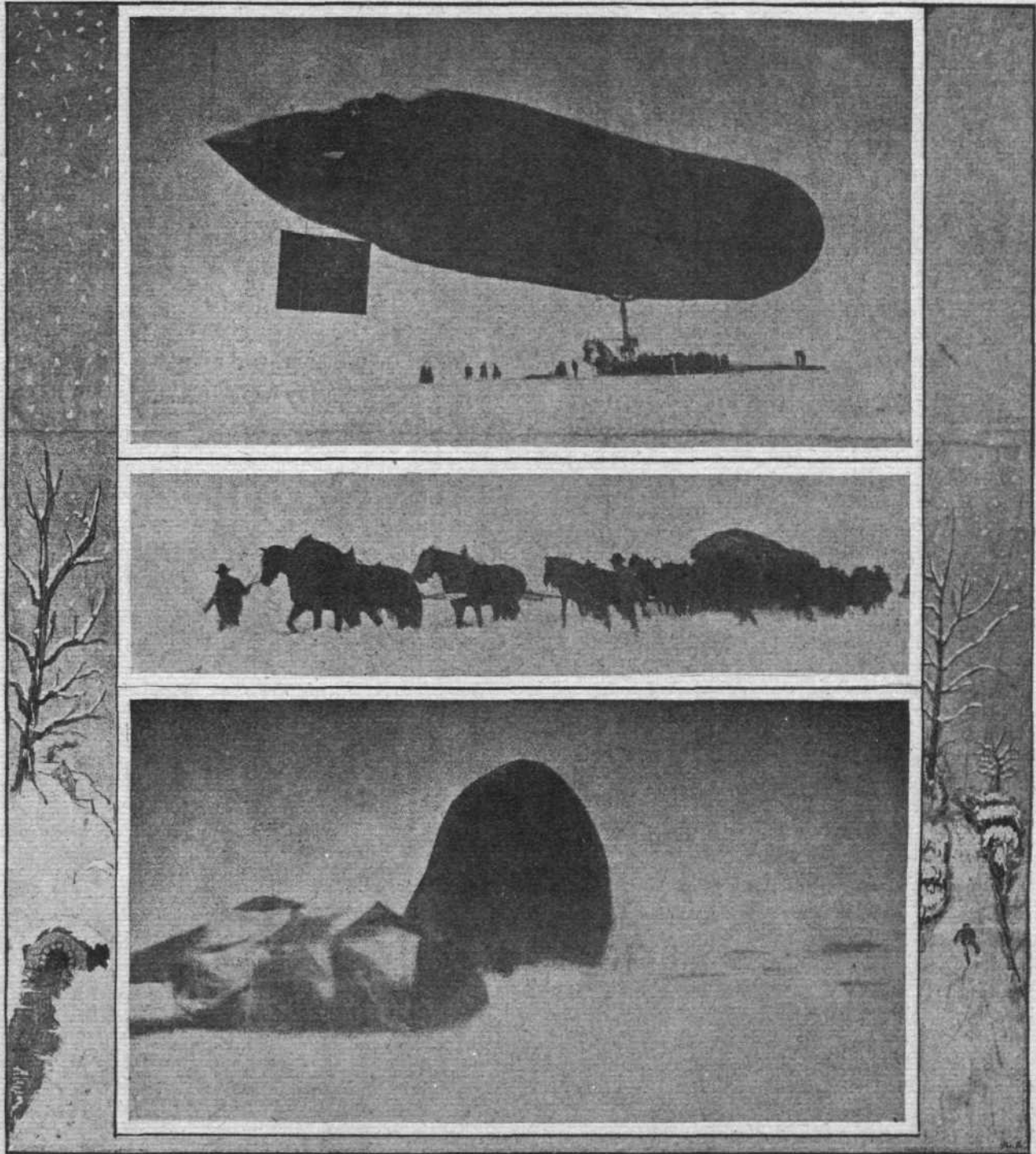


Photo by *Automobil Welt*.

"PARSEVAL III" IN A SNOWSTORM.—On November 14th this German airship travelled from Leichlingen to Gotha, anchoring there in safety. On the 16th a violent snowstorm broke over the district, which the airship withstood splendidly, but the accumulation of snow on the gas-bag eventually collapsed with the dead weight. Ultimately the whole ship was rescued by the Fire Brigade men, and safely landed on the railway for return, our pictures illustrating the scenes during the "encounter."

SHOW NUMBER TWO.

It must be a source of considerable gratification to everyone who is concerned in any way with the welfare of the sport, science or industry of aeronautics, that a second exhibition is to be held in London this coming year of grace 1910. At the present point of progress reached by all three phases of the movement, nothing is needed so much as interchange of notions, experiences and aspirations; so that it would be difficult to imagine anything more thoroughly calculated to encourage development of the new locomotion in Great Britain than the proposed public demonstration next March. The display given at Olympia last March was the first opportunity that had been afforded the British public in general, and Londoners in particular, of acquainting themselves with the appearance and form of that modern marvel—the aeroplane. And the opportunity was given just at the right time for the public to begin fully to realise that all the sensational successes they had read of in their newspapers had an immediate application to the ordinary affairs of life. The exploits of the Brothers Wright, Henry Farman, and others on the Continent had been regarded with considerably more than the passing interest that is customarily given to any of the more or less startling current topics of the day; but it remained for the exhibition at Olympia properly to awaken the latent enthusiasm that is possessed by every people, and to afford them a personal acquaintanceship with the outward aspect of the machines which had performed the modern miracle of mechanical flight. The possibilities, or rather the nearness of those possibilities, were in fact brought home to everyone who visited the Show, and in some measure also to many thousands of those others who had to obtain their information concerning it at second hand.

Naturally the exhibition was not a success from a financial point of view; but no one, and least of all its organisers, ever expected that it could be otherwise. The whole burden of it was borne by the Society of Motor Manufacturers and Traders, a body whose interests naturally embrace the welfare of this latest branch of the motor builder's business. Those who are now adopting the manufacture of aeroplanes as a commercial undertaking, and those who contemplate doing so in the future—not to mention those who have in mind the early acquisition of flying machines of their own—have, in truth, much for which to thank the Society, since, but for their practical efforts at the beginning of this year to popularise aerial locomotion, it is quite certain that the present stage of advancement in this country would not yet have been reached. The Society promoted the March exhibition with no idea of making any direct profit from it, although at the same time the policy which it pursued was based upon the soundest possible commercial lines. It would be fatuous to suggest, of course, that it had no well-conceived motive which would prove of ultimate benefit to itself, or that its action was dictated solely by a patriotic desire to place Great Britain on an equality with France in respect of the design and manufacture of flying machines. Everyone can see that, by its action in coming forward at the time when powerful influence and aid were urgently needed, the S.M.M.T. quietly and firmly secured the unquestioned right to occupy the same predominating position in the coming industry of the air that it holds as regards the British automobile trade. In confirmation of the wisdom of

this step—as well from its own as from every other point of view—it is but necessary to recall the well-nigh startling developments that have taken place in the period since the holding of the first Show, and the consequent leap into popularity of an entirely new sport that is now assured.

It is, therefore, upon a wise policy, rather than upon any philanthropic motives, that we and every other well-wisher of the movement must congratulate the Society, and we do it the more heartily in that the invaluable financial assistance in connection with these early shows has been forthcoming from them without any of the fuss and boasting that has unfortunately characterised the actions of some other ambitious aeronautic bodies. There has been no hypocrisy in the Society's movements or announcements; which, very possibly, is the reason why the credit for first substantially encouraging and popularising aviation in Great Britain is not always accredited to them by writers upon aeronautic topics—let alone by the great bulk of the general public. To them the credit belongs, however, and this essentially is a fitting occasion on which to refer to it once more. There has, moreover, been a conspicuous display of dignity on their part which is bound in the long run (as has been the case with the Aero Club itself), to command respect from all quarters, and to confer lasting power upon them.

Valuable as last year's Show was to the movement, the proposed exhibition at Olympia next March is bound to be superior from that point of view as from every other. Then, the main aim was to consolidate the curiosity of the public while it was yet fresh, in such a manner that encouragement might be forthcoming to experimenters and to prospective builders of flying machines and their accessories, rather than to attract the sporting element in the land and induce those who could afford to indulge in a new pastime to do so without awaiting further proof of its practicability for more or less daily use. This coming year, however, the purely curious stage has virtually been passed, while simultaneously the work of constructing aeroplanes has been proceeding apace, and the pioneering amateur can almost immediately obtain delivery of the machine that he wants. Following very closely upon the heels of the Show, in fact, there will be a very general display of activity in almost every part of the kingdom, the enterprising younger generation which has the wealth at its command disporting itself very freely in the air when the elements are propitious for elementary flight. Hence, a fair meed of actual business may be expected at Olympia for the first time in the annals of the new sport, not only as between those who are preparing to take a prominent part in the industry when it matures and those who can meet their immediate needs, but also as between the firms which are ready to build actual flyers, and those who intend at the very earliest date that is practicable to soar about overhead instead of adhering in the old-fashioned way to Mother Earth. It may be too much to expect that March next will witness an exhibition that will make full monetary amends for this year's loss—and this is just where the S.M.M.T. still comes so handsomely to the rescue—but the whole character of the occasion is sure to be vastly in advance of the first British flight-show. Appearances point, moreover, to the United Kingdom actually leading the whole world as regards International aeronautic exhibitions in 1910.

SOME EXPERIMENTS IN GLIDING FLIGHT.

THE TYPE TO AVOID—AND PRACTICAL CONCLUSIONS.

By HORACE W. H. VAUGHAN.

THE sport of aviation is one of which a large number of us are anxious to obtain some sort of experience, and small experiments of various kinds are being made in all directions.

Now, it seems to me that kite-flying—the placid contemplation of a soaring aerofoil—lacks that active co-operation between machine and operator which is the essence of the sport, and the same may be said of models, especially of those driven by twisted elastic or springs, which are little more than projectiles.

I have for some time felt that gliding flight must afford a valuable insight, at very little expense, into the principles underlying flight as demonstrated by all the modern practical flyers, and I decided in the early part of this year to start upon the construction of a man-carrying glider, and looked about me for means of carrying the work into effect.

Dimensions of practical machines were not over easy to obtain a few months ago, but eventually I came across particulars of a Chanute glider in an article translated from one in a Continental paper by Voisin Bros.

at maximum versine), and clipped on to 1-in. pine main spars of circular section. The main planes were jointed in the middle by short lengths of steel cycle tube forming bayonet catches. The stanchions (out of $\frac{3}{4}$ -in. circular pine) were screwed into plates at the bottom with wing-nuts at the top. The stays were of steel piano wire with a strainer to every pair of diagonals.

The tail was made in the same manner, somewhat lighter, with side curtains laced at their bottoms to the lower plane, a bootmaker fitting the clips for the lacing at a trifling outlay.

For the covering I found that a light blind material was air-proof and cheap, but although good enough to use on a rough experimental machine, not strong enough for permanent use.

The lower main outrigger spars were of bamboo $1\frac{3}{4}$ in. at its maximum thickness and extending from the extreme front to back.

A cycle maker constructed the small special ironwork required, but most of the little screws, bolts, clips, &c., can be found in ordinary commercial use.

The construction, during my limited spare time, took some months, but, at length completed, the machine was taken up in an ordinary cart to some suitable downs about five miles from my house, where I was fortunate in obtaining the use of a shed by the courtesy of the owner.

The following Sunday morning was fine, and a party of us motored up to the ground, but there was no breeze blowing. We set up the glider and hoped for wind, but only the lightest zephyrs played upon our moistened finger.

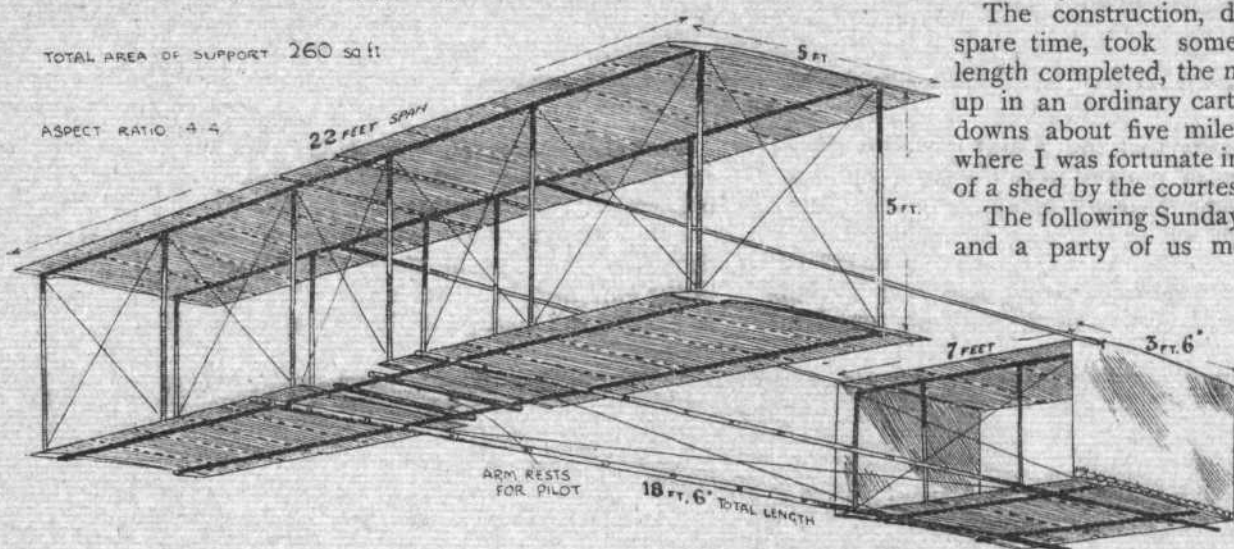
We tried running down the slope, pulling the machine by the 6 ft. cords at each front corner; it was extremely hard work, and the machine only once lifted its own weight for a short distance.

Experiments were then abandoned until more suitable weather. The Sunday after was again dead calm, and the next week-end pouring wet, but the Sunday following was clear with a fine breeze blowing from 15 to 20 miles per hour, as nearly as we could estimate.

We found a slope about 80 yards or more in length facing the wind, and having erected the machine in the lee of the "hangar," we took her round for action.

Upon tilting the front planes, to our joy she lifted up clear from the ground, and showed a considerable upward pull, but the angle she maintained seemed greater in relation to the ground than I had expected from accounts of other experiments.

As we found she exerted her lift more or less steadily when pulled down the slope, I took my place in the machine, and was lifted clear from the ground for 30 or 40 yards, my friends hauling against the wind.



MR. HORACE W. VAUGHAN'S GLIDER.—Sketch to scale.

From this I decided upon the type and dimensions shown in Fig. 1. The sole method of control is by shifting the weight of the body. The next problem was how to find room to construct the machine. My garden is a small one, and I hardly felt disposed to erect a building 30 ft. by 20 ft. to take it if built in one piece.

It therefore remained to devise a glider of such a portable nature that it could be taken down or set up in a fairly short time and stowed away in the motor-house, a building 14 ft. by 12 ft., which has, of course, to accommodate the car as well.

It was felt, as has proved to be the case, that after a very few experiments a more perfect type of machine would be required, and therefore it was highly desirable to reduce the cost of material to a minimum.

I do not propose to enter fully here into all details of construction, but may say that the total cost of material did not exceed £5, and the machine could be taken down or set up under one hour.

The construction of "Vaughan I" was then undertaken. The ribs were cut from $\frac{3}{4}$ -in. spruce battens (curved $2\frac{1}{2}$ in.

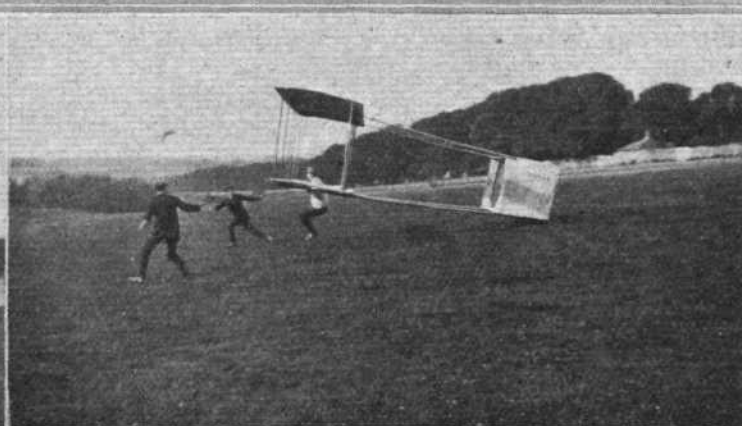
I found, however, that I had extremely little, if any, control. In the gusts of wind I was lifted to the extent of the towing cords, but before I could endeavour to put any theories into practice I was down, rising with a fresh gust, and so on, with an undulating and erratic flight.

I came to the sorrowful conclusion that my machine had not enough wing spread for my weight, and that to lift me quite steadily in the wind we had (which should from all accounts have been quite suitable), the span should have been about 10 ft. more.

on to the pilot's rails, and supported a youngster, who was assisting, steadily in the wind, to his great enjoyment.

I came to the conclusion that what I needed most of all was a front elevator. Our great difficulty seemed to be that we could not obtain sufficient initial speed.

As soon as we started, the glider (with the pilot on board), assumed a partly soaring position, and, giving upward diagonal and erratic pulls of such strength that those hauling at the cords could with difficulty stagger against the wind down the slope.



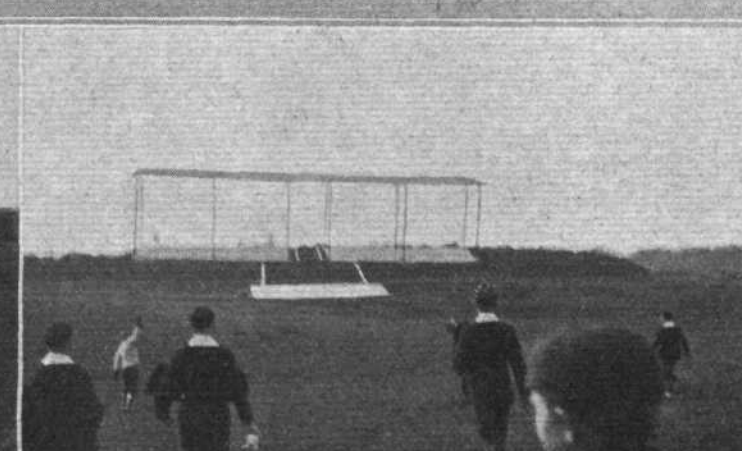
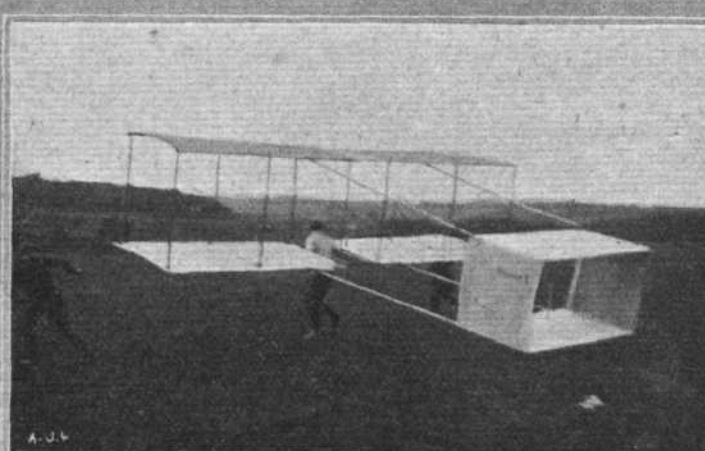
MR. HORACE W. VAUGHAN'S GLIDER.—On the left ready for a glide, and on the right showing how the tail would not lift.

It was thought, also, that the weight of the outrigger and tail seemed out of proportion to the lift of that part, and by keeping a large angle of incidence made control difficult if not impossible.

We then tried removing the upper plane of the tail and top outrigger spars, but as this necessitated also the removal of the side curtains of the tail, we found the

And also, as our hill was, so to speak, one side of a valley, before we had gone the full length we were blanketed by the opposite side or hill.

After we had made a number of flights, as above described, we thought we might obtain a still greater lifting efficiency by removing the bamboo outrigger and remaining tail plane, and this we proceeded to do.



MR. HORACE W. VAUGHAN'S GLIDER.—Well off the ground (on the left), and a good glide with one plane to the tail only.

machine, although it had an increasing efficiency, had lost its "sense of direction," and had to be held into the wind to a greater extent than formerly.

I was able to make a number of flights hauled by my assistants, but at no time did free flight seem possible, or did it appear that I had any practical control over the glider, the flights being, as stated, of an undulating and erratic nature.

Without the pilot the machine soared steadily with the hauling cords nearly vertical. We rigged up a light trapeze

This final experiment, however, proved disastrous. The glider, now consisting of the front main planes, first tipped over, presenting the flat of the foils to the wind, and then with great suddenness and force assumed a soaring position with a strong lift.

In the meantime one of the towing cords had slipped 2 ft. down the main spar, and this, being of 1-in. pine, as mentioned, was unable to stand the strain at an unsupported point.

It broke with a loud report, and the rope fell free, the

machine swung over, and came to earth on one corner. There was not much superficial appearance of injury, but I found upon examination that several stanchions were broken from their fastenings, four ribs were broken, and the fabric torn in several places.

This finished my experiments with "Vaughan I," and I decided rather than repair the breakage to start at once upon "Vaughan II," a glider of 33 ft. span, with full control—to be started on a rail with a pylon so as to give freedom from dependence upon wind, and allow experiments on calm days.

The conclusions arrived at from my experiments were:—

1. That with a Chanute glider of the type described—
a. With 22 ft. span the pilot should not weigh more than 130 lbs. In my case (I weigh 180 lbs.) 10 ft. more span was necessary, or 100 extra square ft.

b. That gliding experiments can only satisfactorily be made with a steady wind 20 to 22 miles per hour against

a hill rising more or less from a flat plain, *i.e.*, without opposing hills or trees.

c. That the tail exerts no lifting force to assist the pilot; as constructed, its lifting value was insufficient for its own weight and that of the outrigger.

d. That control is only possible to a very limited extent, and unless the wind is steady, not at all.

2. That a front elevator is essential to keep the machine down when attaining initial starting speed.

3. That the work of towing the machine in starting against a 22 m.p.h. breeze is of such arduous nature as to greatly hamper experiments.

4. That a more comfortable support is necessary for the pilot than the two cross-bars under the arm.

5. That perfection of sport in gliding is only to be attained with a fully controlled machine, started from a pylon so that it may be used at any time irrespective of wind. And it is upon these lines that I am now at work.

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SPIRAL TUBE RADIATORS.

A GOOD deal of attention has recently been drawn to the special type of radiator tube that is made by The Spiral Tube and Components Company in their King's Cross workshops, owing to the marked success obtained with it by Mr. Cody on his famous aeroplane at Aldershot. It is not alone the lightness of this tubing, nor indeed its mechanical strength—great as that is in relationship to the weight of the materials employed—that renders it interesting to users of petrol engines, whether for land, sea or air purposes, but even the method that is employed for turning it out in a commercial form is well calculated to call for something more than mere passing mention.

This form of tube, when finished, has the appearance that is conveyed by the accompanying illustration. In other words, it consists of a plain solid drawn tube having



Two short lengths of the Spiral radiator tube, showing the corrugated ribbon construction which ensures great strength and low weight.

a corrugated ribbon wound edgewise around it in the form of a continuous spiral. From a mechanical point of view the corrugations render the ribbon extremely stiff in spite of the thinness of the material; while in addition to this a remarkably small quantity of solder is required for fixing the ribbon to the tube, and yet an extraordinary degree of strength is possessed by the completed article. From a thermal standpoint, moreover, the corrugations have a marked effect upon the total area of the surface exposed to the air, besides which they set up that additional local resistance which is so important to efficient radiation; while the thinness of the metal, in the

original tube, in the ribbon, and in the solder forming the joint, is highly beneficial to the action of the apparatus.

Constructionally, this spiral tubing is turned out in lengths by a very simple but highly ingenious machine into which is fed the bare tubing, the smooth uncorrugated ribbon and the fine strips of solder. As if by one automatic process, the ribbon is corrugated and is wound around the tube, while simultaneously the exact quantity of solder with its flux is fed along the intermediate joint, so that subsequently all that is needed is the application of sufficient heat to melt the solder.

Usually standard tubes like those employed on the

Cody aeroplane are about a hundredth of an inch thick, and the ribbon wound around them has a thickness of from three to four thousandths of an inch. To examine a finished tube, very considerably greater thicknesses would be imagined, because of the wonderful stiffness which we have already referred to. In view of these thicknesses, however, it will readily be understood that a total weight of only one ounce per foot run is easily attainable, and that for special requirements, if weight were deemed sufficiently important, it could be reduced very much lower by using a thickness of say .006 in. for the tube and .002 for the ribbon. As it is, however, the standard tubes now in use enable a radiator to be constructed weighing only $\frac{3}{4}$ lb. per h.p., including the water—or just over half a pound for the complete radiator when empty.

Except when radiators of sheet metal construction are insisted upon, the Spiral Tube Company invariably build their finished radiators with aluminium tanks top and bottom, sweating the solid drawn tubes into end-headers that have flanged collars at all the joints. In this way they are able to test every radiator up to 20 lbs. per sq. in. pressure with hot water, and could usually guarantee at least 50 lbs. per sq. in. if called upon to do so.

In connection with the particular radiator on Mr. Cody's machine, it is of interest to observe the following figures, which have a direct bearing upon the efficiency of the spiral tubes, even if they are necessarily based to some extent on assumed data. The engine may be deemed to have been developing about 60 h.p. during the long-duration one-hour flight, and if 3,000 B.T.U. are allowed per horse-power-hour the heat to be dissipated would have been 180,000 B.T.U. As regards the size of the radiator, this was composed of 480 ft. of $\frac{1}{4}$ -in. tube (31 sq. ft. area), the double-sided spiral ribbon (120 sq. ft.), and the cylinder surfaces, &c. (12 sq. ft.); so that a total cooler area of 163 sq. ft. may be taken. Seemingly, too, about a couple of pints of water were evaporated during the hour, which would account for some 2,415 B.T.U., and hence the nett efficiency of the total radiator must have been in the neighbourhood of no less than 1,089 B.T.U. per sq. ft., per hour.

Another important point in connection with this type of radiator tube is that it only offers a relatively low resistance to the air.

AN INGENUOUS IGNITION-PLUG.

By an ingenious combination of parts, several advantages have been aimed at in the "Maurice" plug that is sold by Messrs. Eyquem's Patents. First and foremost it is sought to render it "self-cleaning" by forming a clear passage-way right through the centre of the plug and by constructing the insulated electrode in the form of a relief-cock that enables this passage-way to be opened or closed at will while the engine is running. The idea in this respect is that any carbon deposits can be blown or washed out, thus enabling the

plug to be used for paraffin engines or under any similar conditions where incomplete combustion is apt to interfere with the ignition. If the cock is opened when the engine is running, the rapid rush of gases tends to clear away any obstructing particles there may be, while further than this, the cock permits paraffin or petrol to be injected for the purpose of cleaning the insulating material inside the plug.

The accompanying illustration shows the manner in which the cock is arranged, while the lower view also indicates the substantial nature of the spark-points and the effective character of the insulation employed. Therein it will further be observed that a contact-wire is

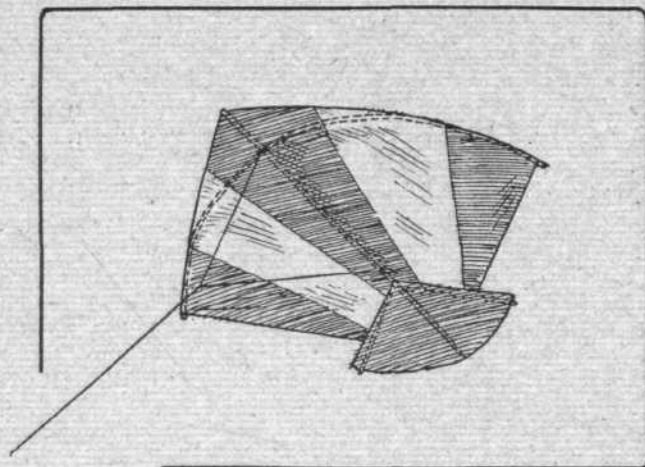


The "Maurice" self-cleaning spark plug.

fixed to the handle of the cock in such a way that this wire short-circuits the ignition-plug when the cock is open, but does not interfere with its electrical action when the cock is closed. The wire, therefore, forms a convenient switch for testing the ignition at any time—especially as the length of external spark can be ascertained by it. Needless to say, too, the cock serves for introducing paraffin into the cylinders in the event of this being required by the piston-rings as well as for cleaning the plug itself. Brass is used for the body of the plug, and either porcelain or mica is employed for the insulation.

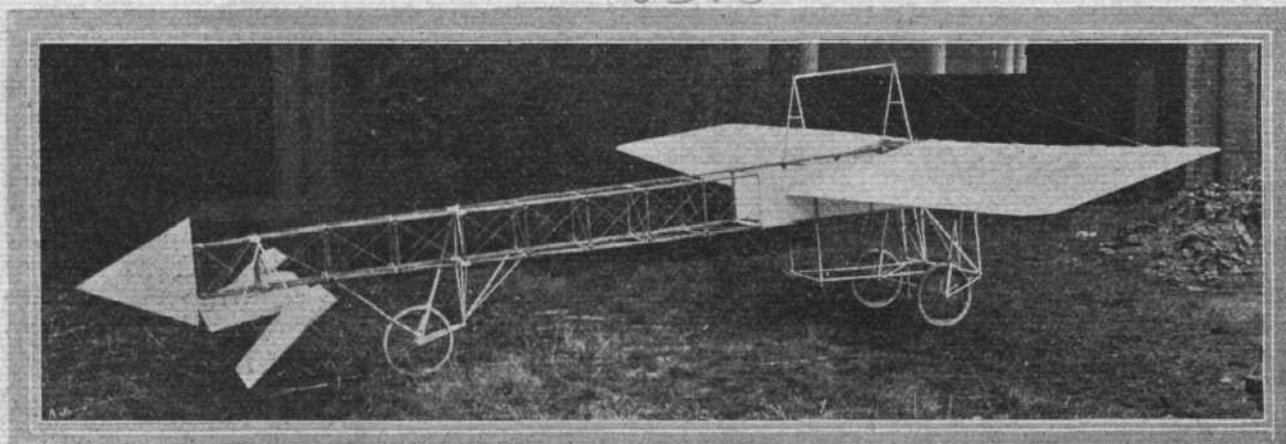
THE VAKATA KITE.

As an outcome of the Kite-Flying Association's recent competitions, and our full reports of the same in these pages, we have been requested to give further information relating to the "Vakata" Indian kite. For this purpose we have obtained a set of these kites from Messrs. A. W. Gamage, who stock them, and we herewith give a sketch which shows their shape and construction.



The Vakata kite is approximately rectangular in shape having sides measuring about a foot in length. The frame consists of two light pieces of cane, one of which forms a backbone, while the other is bent across it like a bow. The surface of the kite is made of tissue paper, and at the tail corner two extra thicknesses of paper are pasted on, as shown in the sketch, and these are stiffened by a pair of very light cane ribs. The whole construction is characterised by its lightness, not to say apparent flimsiness, although they seem to be wonderfully strong in the air. Added interest is given to this form of kite, inasmuch as Major Fink has devised a game to be played with them, in which teams of different coloured kites oppose one another in accordance with certain rules. The object of the game is to sever the kite-line of an opponent and to capture the severed kite in mid-air before it floats away. Instructions and rules for playing the game are given in detail with the set of kites with which it is played.

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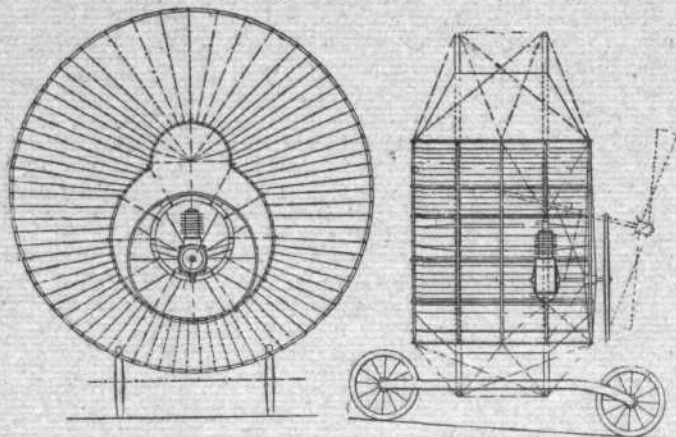


A small monoplane, one of his latest models, constructed by Mr. Howard T. Wright, of 110, High Street, Marylebone. It has a total width of 27 ft., length 28 ft., area of plane 160 sq. ft., weight without motor 350 lbs., in running order 500 lbs. It is fitted with 30-h.p. air-cooled motor and single propeller running at 1,200 r.p.m. Two of these machines have already been made for customers, and a third is now in course of construction, and will be ready in about 14 days.

INVENTORS' IDEAS.

A MACHINE WITH 50 PLANES.

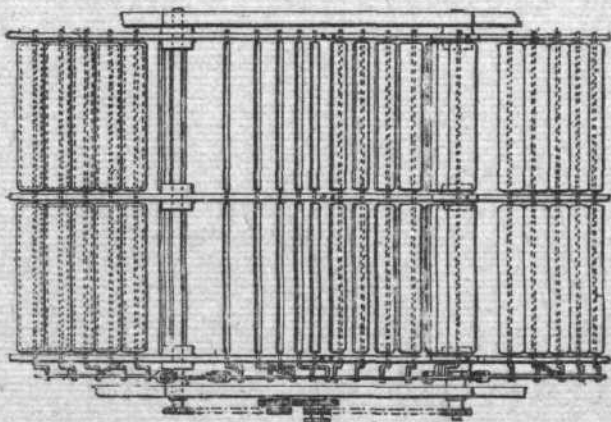
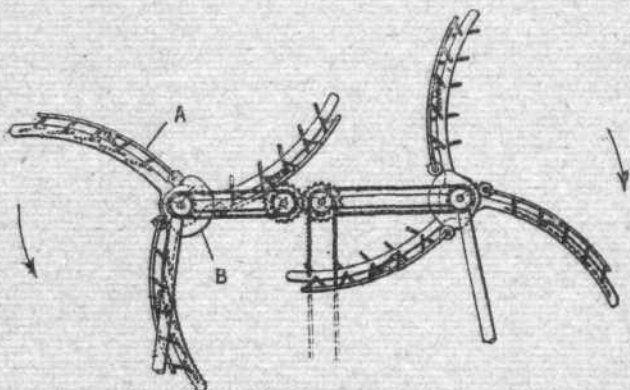
THIS patent describes a flying machine in which the planes stretch between two rings, one inside the other, as shown in the drawing. The patent also covers the arrangement for suspending the motor in a ring, and also for adjusting the propeller-shaft. The arrangement



of the inner member as shown is to allow space for the crew of the aeroplane, and across the bottom of the same member it is proposed that a platform should be fixed.—R. d'Equieville-Montjustin. 17,370 of 1908.

FEATHERING WINGS.

IN this patent is described an arrangement for positively opening a series of louvres or vanes in a revolving wing and closing them automatically. The vanes in each wing are connected by a little crank



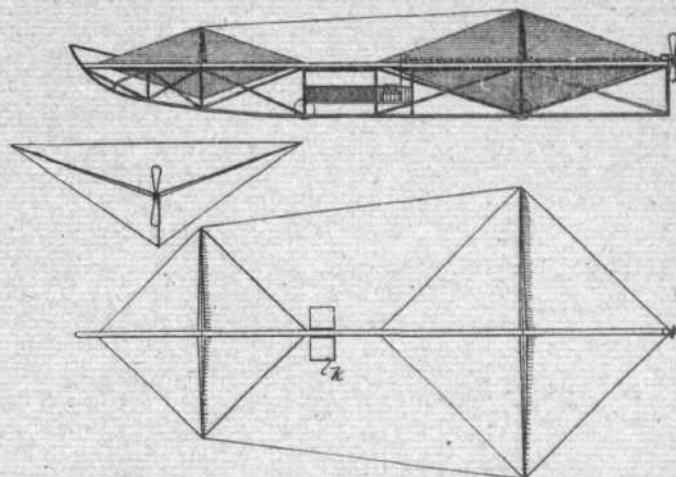
to a rod, A, which is operated by the cam, C, so that they are opened when the wing is travelling upward, but when the wing commences to descend the vanes close automatically, assisted by a spring.—Wm. Hammant. 23,129 of 1908.

CANVAS PROPELLER.

THIS invention relates to the construction of a propeller in which the blades are formed by canvas, silk, or similar material mounted on a frame, and consists in mounting the material loosely, so that when at rest the material is always baggy. The use of indiarubber or highly elastic material that will expand under pressure, and re-contract when the wind pressure is more gentle, is also covered.—T. Elliott. 9295 of 1909.

A TANDEM MONOPLANE.

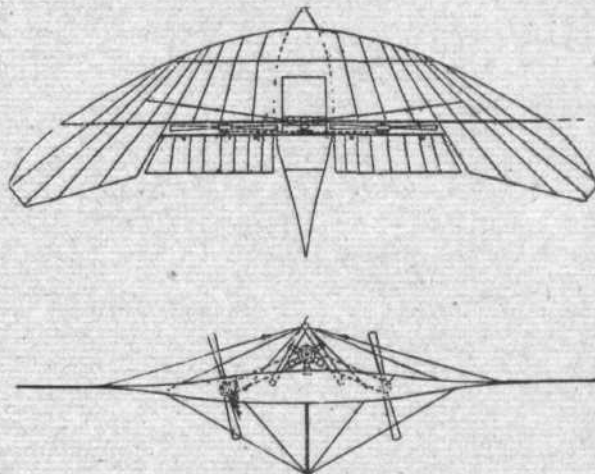
THIS patent describes an arrangement of square monoplanes placed with the diagonal planes in a fore and aft direction, and arranged with a dihedral angle. The use of a keel, equal in area to the area



of elevation of the inclined planes from which it depends, is claimed as an essential feature of this machine. The patent also describes the construction of a model apparatus for use as a toy.—W. F. Howard. 21,668 of 1908.

BIRD-SHAPED AEROPLANES.

THIS patent describes a design of monoplane founded on the experiments carried out by Mr. Jose Weiss with bird-shaped models. The special feature which is claimed in the invention is the use of a bump or marked convexity on the upper surface of the plane about its central or mid area and towards the front edge, sloping away to



all parts of the wings with a particularly steep slope towards the front edge. The height of the bump must be at least one-tenth of the distance from the front edge to the main beam which extends across the machine in front of the propellers.—Jose Weiss. 17,150 of 1908.

ADJUSTING AREA OF PLANES.

AN arrangement of planes in which the position and effective area of planes, especially of those for steering or controlling the machine, can be adjusted, is described in this patent. In the design shown, a square plane having an aperture is mounted in a frame, while



below it another plane is so arranged that it can be adjusted from one side of the central portion to the other, thus varying the effective area of the planes, and altering their relative positions.—J. L. Garsed. 23,316 of 1908.

AERO CLUB OF THE UNITED KINGDOM.

OFFICIAL NOTICES TO MEMBERS.

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 30th November, 1909, when there were present: Mr. Roger W. Wallace, K.C., in the chair, Mr. Ernest C. Bucknall, Mr. Martin Dale, Professor A. K. Huntington, Mr. V. Ker-Seymer, Mr. J. T. C. Moore-Brabazon, Mr. C. F. Pollock, Hon. C. S. Rolls, Mr. Stanley Spooner, and Joint Secretaries, Capt. E. Claremont, R.N., and Harold E. Perrin.

New Members.—The following new Members were elected:—

A. S. E. Ackermann, B.Sc.	Capt. G. L. Hinds Howell.
R. Wherry Anderson.	Capt. W. Kirke, R.A.
W. Hackler Arnold.	A. J. Liversidge.
Alfred F. Bird, J.P.	P. B. Liversidge.
Gordon Brown.	Lieut. G. Le Q. Martel.
Mrs. Tennant Bruce.	Herbert Merton.
Maj. Henry R. Cook.	N. R. Miller.
Stenson Cooke.	J. Miller.
J. S. Critchley.	C. Harrington Moore.
W. G. Cuthbert-Gundry.	W. Fell Pease.
Sir Thomas Dewar, Bart.	H. R. Pidgeon.
George P. Doolethe.	George L. Pitt.
C. P. Elieson.	Col. Philip E. Pope.
H. T. Ellis.	Capt. A. A. W. Spencer.
Achille Fould.	J. E. Thornycroft, J.P.
J. Ganzoni.	Oliver Wetherel.
Capt. P. S. Harland.	Walter H. Willcox.
Killingworth Hedges.	

Aero Exhibition at Olympia.

The Society of Motor Manufacturers have decided to organise an Aero Exhibition under the auspices of the Aero Club of the United Kingdom, to be held at Olympia in March next. Members wishing to exhibit full-sized aeroplanes are requested to communicate with the Aero Club as soon as possible.

It is also proposed to organise an exhibit of model flying machines. Those desirous of exhibiting are requested to make application to the Aero Club. Free space will be given to model exhibitors, and prizes will be awarded, particulars of which will be announced later.

Doncaster Aviation Meeting.

The Aero Club of the United Kingdom having decided to remit one month of the disqualifications of those aviators who competed at Doncaster, have received the following letter from the Aero Club de France:—

"Aero Club de France,
"63, Champs Elysees, Paris,
"27th November, 1909.

"M. LE PRESIDENT,—We have the honour to acknowledge receipt of your letter of the 24th inst., in which you are kind enough to inform us that the Aero Club of the United Kingdom, through their Committee, have graciously consented to reinstate MM. Delagrangé, Le Blon, and Molon, a step which we solicited on their behalf.

"At the same time we note that the performance of this act of grace is dependent on the approval of the Federation Aeronautique Internationale, and we wish to express to you our sincere thanks for your kindness in considering our demand.

"We are to-day informing M. Delagrangé of the remittal of part of his punishment of which he had been the object, and we are also informing MM. Le Blon and Molon, and are begging them at the same time to express to you their thanks in the form which you have kindly informed us you wish.

"Yours, &c.,
(Signed) "GEORGES BESANCON, General Secretary."



PROGRESS OF FLIGHT ABOUT THE COUNTRY.

(NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary.)

Blackpool and Fylde Aero Club (56, COOKSON STREET).

"THE THEORY OF FLIGHT" was the subject of an interesting lecture given before the members of this Club, on the 24th ult., by Mr. Arthur Theodore Houghton. Mr. T. H. Blane presided.

The lecturer warned experimenters against constructing scale models of known machines and then altering the whole balance by fitting them with elastic motors. The lecturer thought that neglect to observe that simple rule was at the root of most of the failures with models. One might say that a model or machine was badly designed unless it would glide well. He pointed out that the Bleriot machine carried 4 lbs. of weight for every square foot of

Shellbeach Flying Ground.

Members visiting the flying ground are requested to have with them their membership cards, as strict instructions have been given to admit only members to the flying ground.

Members are also reminded that access to the aeroplane sheds can only be obtained with the written consent of the owners of the flying machines.

Additional Flying Ground.

The Aero Club have made arrangements with the proprietor of grounds at Eastchurch, to be used as an auxiliary flying ground for their Members. The ground is situated within half a mile of Eastchurch Station on the Sheppey Light Railway, and the same railway facilities will apply as at Shellbeach. The surface of the ground is very level and free from ditches.

A limited number of sheds may be erected on the grounds, and full particulars can be obtained from the Secretaries of the Club.

Designs of sheds must be submitted to the Committee of the Aero Club in the first instance.

Hiring of Sheds.

Sheds can now be hired out to members at Shellbeach. Full particulars can be obtained from the Secretaries of the Club.

Railway Arrangements.—The following reduced fares have been arranged with the railway company for members visiting Shellbeach:—

1st Class return, 8s.; 2nd Class return, 6s. 6d.; 3rd Class return, 5s.

Tickets available for one month from date of issue.

Members desiring to avail themselves of these reduced fares are required to produce vouchers at the booking offices. Vouchers can be obtained from the Secretary of the Aero Club. Trains leave Victoria, Holborn, or St. Paul's.

For the convenience of Members, the best train is the 9.45 a.m. from Victoria, arriving at Queenborough 10.55. At Queenborough change to the Sheppey Light Railway for Leysdown (Shellbeach), which is $\frac{3}{4}$ -mile from the flying ground.

Annual Dinner.

The annual dinner will take place at the Whitehall Rooms, Hotel Metropole, Northumberland Avenue, London, W.C., on Wednesday, December 15th, 1909, at 7.30 for 8 o'clock. In order to facilitate the arrangements, members are requested to make early application for tickets, and at the same time send the names of their guests, if any. Tickets, inclusive of wines, £1 7s. 6d. Members may be accompanied by ladies.

His Grace the Duke of Argyll has kindly promised to take the chair.

The dinner will be followed by a musical programme. Amongst others, the following well-known artistes will assist: Miss Nadia Sylva, Miss Mavis Clare, Miss Helen Mar, Mr. Frank Haskell, Mr. Aubrey Standing, Mr. Maurice Farkoa and Mr. Charles Hawtrej.

Membership.

The membership of the Aero Club is increasing so rapidly that the 1,000 Founder Members are nearly complete. It is hoped, therefore, that Members will notify their friends who are thinking of joining, as immediately the total of 1,000 is reached, the subscription will be increased and an entrance fee charged.

E. CLAREMONT, CAPT. R.N.,
HAROLD E. PERRIN,

Joint Secretaries.

The Aero Club of the United Kingdom,
166, Piccadilly, W.



supporting surface, but they must not expect a model to equal this, as those machines had a speed of about 40 miles an hour in flight, which a model could not hope to attain.

The lecture was ably illustrated by experiments on models, lent by Mr. Jack Kemp, Mr. J. Gray, and Mr. T. Howarth, and sections of the Club's full-size glider, which were much admired.

Coventry Aeronautical Society (18 and 19, HERTFORD STREET).

THE first lecture will be held on Thursday next, the 9th inst., when Mr. W. G. Aston will take as his subject "The Elements of the Aeroplane."

The meeting will be held at the Queen's Hotel, at 8 p.m., and will be illustrated by blackboard sketches and demonstrations of models. It is thought that the first lecture should be of a very elementary nature, so as to pave the way for more technical lectures subsequently.

The committee would be glad to hear of any suggestions or subjects for lectures, and to receive names of suggested lecturers.

Hartlepool's Aero Club (56, WHITBY STREET, W. HARTLEPOOL).

MR. THOS. BECKETT, Hon. Secretary of this club, writes that some communications have wandered considerably before reaching him, and asks us to notify that his address is 56, Whitby Street, West Hartlepool. He points out that "The Hartlepool" comprises the separate boroughs of "Hartlepool" and "West Hartlepool." Persons not in the know seem to think that the latter is "Hartlepool—West." That is a mistake. The two boroughs are quite distinct, with the names as given above.

Northumberland Aero Club (WENTWORTH PLACE, NEWCASTLE).

THE second general meeting of members of the Northumberland Aero Club was held at the Royal Turk's Head Hotel, on November 25th, when the chair was taken by the Hon. Charles A. Parsons, C.B., the president of the club. The meeting was very well attended, about eighty or ninety members being present.

This being the first occasion on which it has been possible for the president to take the chair at a general meeting of the club, he delivered his presidential address, and in it gave some most interesting details of his early experiments with flying machines. His first model, of the power-driven type, weighed about 1½ lbs., and had as its motive power a small steam engine developing ½ h.p., pressure being got up before the model attempted to fly by means of an independent heating apparatus. This machine succeeded in rising as high as the house, but then descended, the steam being exhausted. Later, the same engine was placed horizontally upon planes, the whole weighing about 3½ lbs., and it then attained a speed of about 15 miles an hour during flights of 120 yards. From these experiments Mr. Parsons decided that the question of power was not so important as the need to overcome the difficulties in connection with the stability and methods of guiding a machine of this type, and he read extracts from the original papers by Langley (published by the Smithsonian Institute) in support of this. In connection with the question of rising from the ground, he mentioned that a pheasant, in getting away, develops about a horse-power, but once on the move needs very little power to fly. Speaking of the propellers of modern times, Mr. Parsons suggested that the thrust could be doubled by gearing down, as a very large amount of power was lost through slip in the case of the high-speed direct-coupled propellers used on some machines.

After the minutes of the last general meeting had been read and confirmed, the hon. sec., Mr. I. F. Fairbairn-Crawford, gave a *résumé* of the business done in committee since that last meeting. Headquarters had been taken for the club at the Royal Turk's Head Hotel, which is in a most central position in Newcastle, and possesses large banqueting-rooms which will be most suitable for meetings and exhibitions. Over the question of the club workshop the secretary wished it to be known that the opinions of the members were required before any further proceedings would be taken, in order to see how many of them were proposing to make use of the place. Premises had been found near the Central Station which seemed to suit the club's requirements admirably, being fitted with machine tools, lathes, saws, &c., with room for at least a dozen members to work simultaneously in comfort. It was then announced that arrangements had been made with Mr. M. L. Blin Desbleds for a lecture on Aeroplanes, embracing their construction and motive power, &c., to be held in the Connaught Hall, Blackett Street, on Saturday, December 4th, at 8 p.m. Members would be admitted free on production of their membership cards.

Passing to the question of membership, the secretary stated that the numbers of the club were advancing rapidly, and that it had been decided to admit lady and junior members at a reduced subscription of five shillings. Honorary auditors were elected, and the winter programme was then discussed. It was decided that at the end of January a model aeroplane exhibition should be held, together with a display of photographs of machines, and possibly engines and parts. Later in the year, in March or April, when the weather was more propitious for open-air meetings, a model competition would take place.

During the discussion over a suitable ground for gliding and flying experiments, Mr. Parkinson (whose successful flight on a Bleriot monoplane—the first monoplane flight by an Englishman in England—was recently commented on in these pages) suggested that arrangements should be made for the use of the Town Moor. He stated that Gosforth Park, which had been proposed, was somewhat unsuitable for actual flying, owing to the enclosed nature of the ground. It was raised that the Town Moor was open to objection on account of its publicity, but the secretary promised to make inquiries.

Mr. Parkinson then stated that he was constructing at his works six machines of the Bleriot type, and he offered to let any member of the N.Ae.C. have the opportunity of purchasing one at cost price—a generous offer, which was received with great applause.

A hearty vote of thanks to the Hon. C. A. Parsons for taking the chair was moved by Mr. Higginbottom, who commented on the good fortune of the club in securing for its president one who possessed such remarkable and unique qualifications, having been one of the earliest pioneers of research in the subject. Mr. Gerald Stoney, in seconding, cited the progress of the bicycle and the motor as evidences of the future of the aeroplane, and the motion was carried amid much applause. Mr. Parsons, in replying, mentioned that up to the present his only personal experience of actual flight had been from the saddle of the old high bicycle of twenty years ago, before the introduction of the safety.

After a vote of thanks to the hon. secretary for the immense amount of labour expended by him in elaborating the details of the organisation, the meeting concluded, the majority of the members adjourning to inspect the club premises.

Scottish Aeronautical Society (185, HOPE STREET, GLASGOW).

PROFESSOR BARR presided at the first public meeting of the Scottish Aeronautical Society, provisionally formed in June last, which was held on the 24th ult. in the hall of the Royal Philosophical Society, Bath Street, Glasgow.

The Chairman explained that the meeting was called to inaugurate in a more or less public manner the formation of a society for the advancement of aeronautics in Scotland. For some months a small group of enthusiasts had been engaged in the preliminary work, which had been done with energy and perseverance. The Society would have general control of the aeronautical movement in Scotland, and arrangements were well advanced for its close association with the Aero Club and the Aerial League. It would occupy a position in Scotland similar to that held by the Scottish Automobile Club in motoring affairs. The Chairman went on to speak of the advance made in recent years in artificial flight. If during the next few years equally rapid advancement was made, the effects as regarded the arts of peace and war would be incalculable. Though they might confidently anticipate revolutionary results, he would be a bold and a foolish prophet who would seriously attempt to forecast what those results would be. Few of them could have foreseen when Maxim rose from the ground in a flying machine in 1903 that in a very short time men would be flying hundreds of feet above the ground, and safely navigating the uncertain air even in strong winds.

Professor Biles gave a short address on the scientific phase of aeronautics, and in the course of his remarks narrated how Glasgow University was very closely associated with the pioneer stage of artificial flight. Sixteen years ago a young man named Percy Pilcher, who had been a midshipman in the Navy, entered the University to take up engineering as a pursuit, and became Professor Biles' assistant. He was keenly interested in flight, and made several machines, which he called soaring machines, about 12 ft. or 15 ft. square. On these machines, which were merely wings, there was a framework on which Pilcher stood. He went down to Cardross, and on a hill there attached the machine to himself, resting his body on the framework, and ran down the hill with it. When he got up enough speed the pressure underneath lifted him off the ground and he was carried across to the opposite hill at the other side of the valley. Pilcher came to several of them in Glasgow and tried to interest them in flying. Particularly, he tried to interest Lord Kelvin, to whom some of them spoke on Pilcher's behalf, but Lord Kelvin's verdict was—"The thing is too soon; don't encourage him; he will kill himself." Unfortunately, poor Pilcher carried on his enthusiastic studies, and while exhibiting the machine to some friends at Rugby, part of it broke and he was killed. Pilcher was a pioneer, and in Glasgow, under the same organisation that produced James Watt. He was before his time trying to do what has since been successfully done. He designed several motors with the view to applying them to the machine, but did not succeed in getting one light enough. Moreover, he had not quite enough money to make a big enough machine for his purpose, otherwise the honour of producing the first flying machine might have attached to Glasgow and its University.

Mr. Archibald Denny said that while great advances had been made, he doubted whether the aeroplane would ever become quite a commercial machine, one which they could travel in with as much comfort as they had in motor cars. He mentioned that his firm were at present engaged in trying to make a flying machine, but as it had not yet flown he would not say anything about it.

In the course of the evening an interesting series of lantern slides were shown of various kinds of flying machines. They were described by Mr. G. P. Currie, Mr. D. Gordon-Anderson, and Colonel John Sillars.

AVIATION NOTES OF THE WEEK.

Aero and Marine Exhibition at Olympia.

At length the Society of Motor Manufacturers and Traders have definitely decided to proceed with the organisation of an Aero and Marine Exhibition to be held at Olympia next March. Already the Management Committee have considered several matters arising out of the recent Show with a view to possible improvements, including the catering arrangements.

Doings in Sheppey.

ON Friday of last week the Hon. C. S. Rolls made a good flight at Sheppey, covering on his Wright machine 7 miles and only coming to earth because of trouble with the engine. Although the motor stopped in mid-air Mr. Rolls had no difficulty in gliding safely to earth. Mr. Frank MacClean has also been making on his Wright flyer several short flights up to about a quarter of a mile in length. The actual distance covered by Mr. Rolls in his cross-country trip from Shellbeach to Eastchurch the other day was $5\frac{1}{2}$ miles.

The R.A.C. and the Aero Club.

In proposing the toast of the Chairman, Mr. Roger W. Wallace, at the R.A.C. Founder Members' Dinner on the 24th ult., the Hon. Arthur Stanley, M.P., said that without wishing to enter upon any contentious matter, he felt obliged to say that he admired the way in which Mr. Wallace had steered the fortunes of the Aero Club. It was necessary that there should be a central authority in this country for automobilism, and also one for aeration—or whatever they called it—above the country. The latter paramount authority was the Aero Club, and Mr. Wallace was its chairman. The Royal Automobile Club was going to do all in its power to uphold them.

Latham Beats Altitude Record.

IN spite of a wind blowing at the rate of over thirty-six miles an hour and driving rain, Mr. Hubert Latham, on Wednesday afternoon succeeded in beating the height record hitherto held by M. Paulhan. Flying in a manner which was reminiscent of his daring flight at Blackpool, Mr. Latham gradually fought his way to a height which General Journet, the official observer, declared was 475 metres (1,550 ft.). The duration of the flight was 32 mins., and Latham was accorded a great ovation on coming to earth.

Cantor Lectures on Aeronautics.

ON Monday last Mr. C. C. Turner delivered the first of a series of four Cantor Lectures before the Society of Arts on the subject of aeronautics. It dealt with the matter generally, but the next one, on December 6th, will be devoted to dirigible balloons; the third, on December 13th, will refer to aeroplanes; while the fourth, on December 20th, will deal with motors for flying machines and the uses to which such machines can be put.

Doings at Aintree.

ALTHOUGH Mr. Cody was all in readiness at Aintree last week, the weather was against flying. On the 25th there was a spell of good weather, and Mr. Cody flew round the Aintree course several times, on one occasion taking his assistant, Mr. Le Roy, with him. During these trials Mr. Cody more than once took his hands off the steering-wheel to demonstrate that his machine possesses a great measure of automatic stability. The

Rev. Sidney Swan got his monoplane completed on the 24th ult. and gave it a trial, but the engine did not develop its full power, and the equilibrium did not appear to be quite satisfactory. On Tuesday, Mr. Swan again tried to fly in the face of a strong wind, but was not successful. The machine rose, but a gust of wind caught it and caused it to turn over. The aviator was thrown clear and escaped uninjured, but the machine was badly wrecked.

An Aerodrome at Rhyl.

AN endeavour is being made to utilise Rhuddlan Marsh, between Abergele and Rhyl in North Wales, as a flying ground. It is a flat plain, about ten square miles in extent, bordering the estuary of the Clwyd, and it is suggested that it should be made into either a permanent flying course for meetings or a trial ground for amateurs to practise over.

French War Minister and Aeronautics.

SOME idea of the importance which is placed upon the value of aeronautics by the French military authorities can be gleaned from the fact that M. Clémentel, in his Report on the Budget for War, devotes twenty-seven pages to the subjects of dirigible balloons and aeroplanes. In this report M. Clémentel sets forth the advantages, &c., of both types of flyer, and urges that France should see to it that she is in the forefront. He urges that a substantial vote is necessary in aid of military aeronautics.

A Trio—one an Aviatress—Flying at Once.

VISITORS to Chalons Camp on Friday of last week found a great deal of activity, and those who stayed till the evening witnessed the unusual sight of three flyers in the air at one time, one of them being a lady. Mr. Walton, who has recently purchased a Henry Farman machine, was the first to go up, and he was soon followed by Latham, and while these two were racing in the air Mme. de la Roche started on a short trip. Latham, of course, chose the upper berth, and flew round at a height of over 70 feet. He was also the first to come down after flying once round the camp. Earlier in the day Mme. de la Roche had executed a long flight, covering no less than six circuits of the ground.

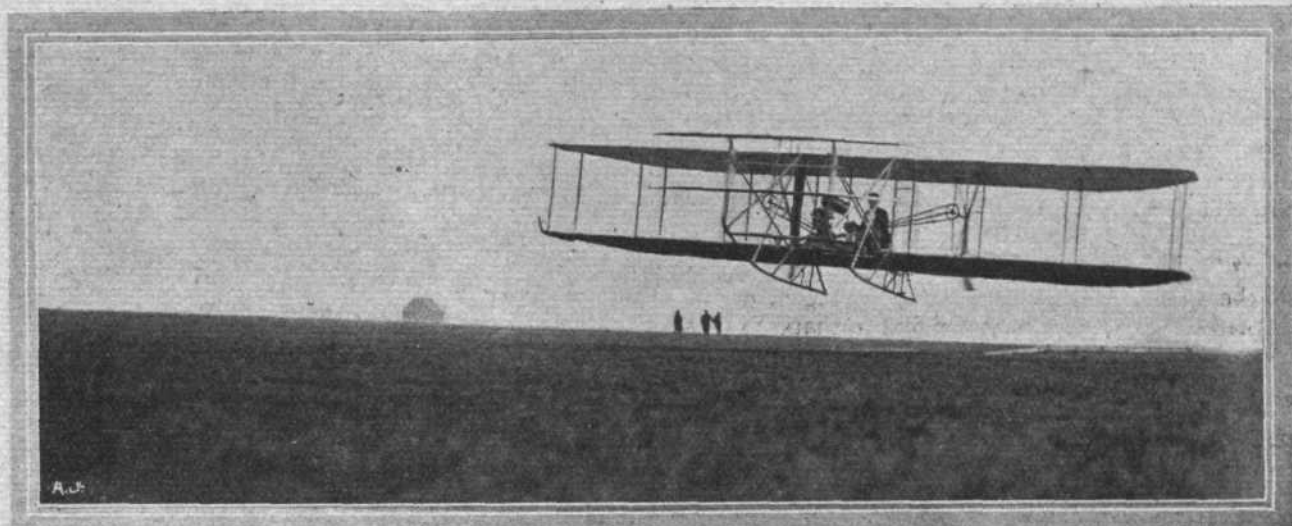
Santos Dumont at Issy.

M. SANTOS DUMONT has recently fitted a 40-h.p. engine to his "Demoiselle" and had a somewhat exciting experience while testing it at Issy on the 23rd ult. The little flyer developed an extraordinary speed and rose rather over easily. The unusual pace caused M. Dumont to immediately descend. He, however, was unable to bring the machine to a standstill, although he used his hands as brakes on the wheels, before it collided with the railings. M. Dumont was uninjured, but the wings and screw being somewhat damaged have been sent to St. Cyr for repair.

Paulhan to Visit the States.

M. LOUIS PAULHAN is to visit the States, and it is to be hoped that his reception and treatment will be a little better than that accorded to Henry Farman when he was persuaded to visit the land of the Stars and Stripes some months ago. Rumour has it that his engagement is for six months and that his salary will be £4,000 a month. He is to leave for New York on Christmas Day.

In the meantime, M. Paulhan's famous mount "Gypaète," which he is to take with him to America,



Mr. Frank K. McClean flying low on his Short-Wright machine at Eastchurch, the Aero Club's auxiliary flying grounds on Sheppey Island.

was badly damaged the other day. The aviator's mechanic, Masson, was making a trial flight, and when at a height of 20 metres cut off the ignition, but was unable to prevent the machine making a sharp descent. The excellent system of shock-dampers, however, adopted by Mr. Henry Farman on his machines, prevented any extensive damage being done and the mechanic was unhurt.

Maurice Farman at Buc.

MR. MAURICE FARMAN had his machine out at Buc on the 23rd ult., and made four flights of 3, 5, 7 and 12 mins. duration respectively, reaching a height of 50 metres during the last-mentioned essay.

Doings at Chalons.

DURING the latter part of last week there was never any lack of activity at Chalons Camp, for the pupils of the Farman, Antoinette, and Voisin schools were all at work, and on Saturday last Latham flew for about ten minutes in a new Antoinette which had just arrived from the works. Henry Farman also has been further experimenting with his new machine, and on the 23rd ult., in the early morning, flew round the ground six times. Among the learners the most successful was Valleton on a Farman, who flew for sixteen minutes.

At Juvisy.

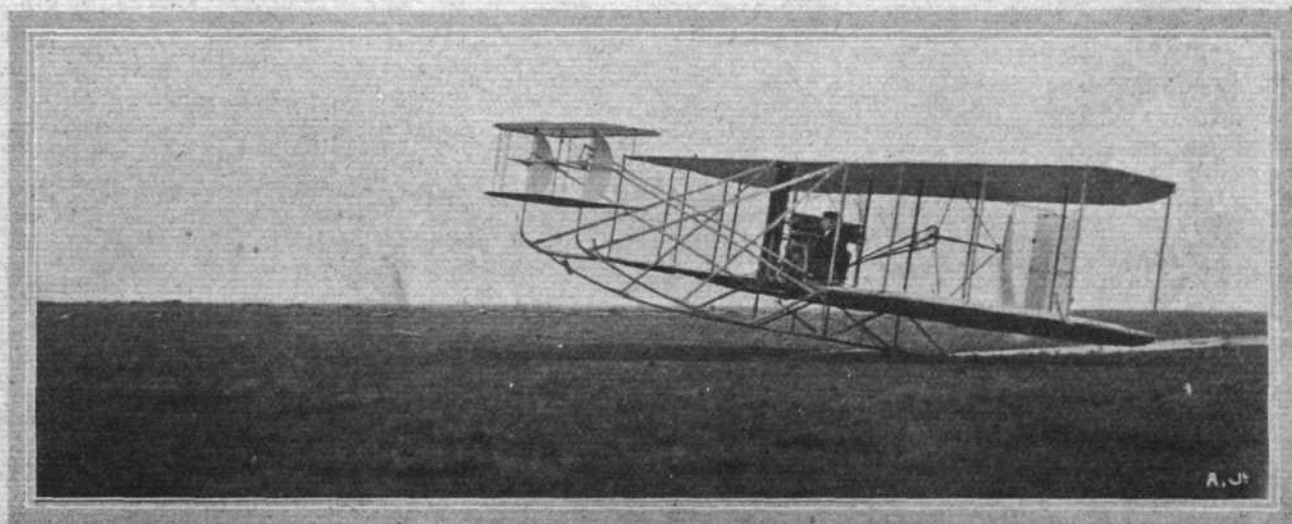
DURING last week Gaubert on his Wright, Richet on his Voisin, and Comte Lambert were flying at Port Aviation on several days. On the 27th, Count Lambert flew for 22 minutes, while on the previous day Ladoville, on the Goupy biplane, and Koechlin, on his monoplane, each made several rounds of the course. Gaubert also flew round four times at a height of 10 metres.

50 Minutes Flight with a British Engine.

It is interesting to note that the Voisin machine on which M. Chateau instructs the purchasers of Voisin biplanes is fitted with a Wolseley motor, and on the 27th ult. M. Chateau made several flights, the longest being of a duration of 49 mins. 35 secs. He was followed by several of his pupils, one of whom, M. Baeder, who flew during 17 minutes.

Molon at Havre.

WITH a view to making an early attempt to fly across the sea from Havre to Trouville, Molon has been practising on his Bleriot monoplane at Blainville. On the 25th ult. he made a couple of short flights, one of two and a half minutes and the other of one and a half minutes.



Mr. Frank K. McClean, a member of the Committee of the Aero Club, on his Short-Wright biplane just leaving the starting rail during one of his recent successful flights at Eastchurch, Isle of Sheppey.

A Meeting at Havre Next Year.

A SCHEME is now under consideration for the organisation of a flying meeting in the Seine Estuary, during next summer. If the idea matures, a feature of the programme will be flights across the bay from Havre to Trouville and Deauville, the most important prize being that for crossing the Seine, presented by M. Henry Deutsch de la Meurthe.

U.S.A. Wright Flyer Damaged.

ON the 5th ult. the Wright flyer, belonging to the United States Army, met with its first mishap. Lieut. Lahm was the pilot, and had with him Lieut. Humphreys as passenger. For some reason the motor was miss-firing badly, and in consequence the aeroplane sank towards the ground. Apparently the pilot failed to notice this, for in making a sharp turn the right wing tip touched the ground and brought the machine to earth with a crash. Neither of the officers was hurt, but the machine had to have a new wing tip and right skid fitted. On the previous Wednesday Lieut. Humphreys carried Lieut. Foulois for 1h. 1m. 45s., and only came down at the request of Wilbur Wright in view of the rising wind.

Grade Flies High.

Now that he is becoming more familiar with his machine, Herr Grade is venturing higher and higher. At Breslau, on the 23rd ult. he executed four flights, varying from two to five minutes each in duration, and in the course of one an altitude of 140 metres was attained.

A New German Biplane.

In spite of their being inconvenienced by a heavy fall of snow, two German inventors, Herr Amerigo and Herr Thiele, succeeded in getting the biplane they have built at Leipzig to make several long jumps. They declare the results obtained are satisfactory, and as soon as the weather improves they will be able to make long flights.

Russian Military Aeroplanes.

It is announced from St. Petersburg that the Estimates of the Ministry of War include a credit of £250,000 to be expended upon aviation. The first of the five aeroplanes, which are being built to the designs of Capt. Goluboff at Gatchina, is now nearly ready for trial at the Military Balloon Grounds there. In general appearance it resembles the Wright flyer, and is fitted with a 30-h.p. motor.

A Motor and Aero Salon at Geneva.

UNDER the patronage of the Swiss A.C. arrangements are being made to hold an exhibition of motor cars and

all that pertains to aviation during May next. If possible arrangements will be made for some trial flights to be carried out in connection with the exhibition, and already several good prizes have been offered.

Flying in Algeria.

ON Sunday last before a crowd of 25,000 people an exhibition of flying was given by MM. Metrot and Saurin, the former on a Voisin biplane and the latter on a Bleriot monoplane of the cross-Channel type. M. Metrot met with the greatest success, and his best flight was two kilometres in length. M. Saurin made one or two long jumps of about 200 metres.

The Cairo Meeting.

ACCORDING to the provisional programme just issued, it is proposed to offer about £8,000 in prizes at the meeting which the A.C. de France is arranging to hold in the neighbourhood of Cairo from February 6th to 13th next. The chief prize will be for the longest flight, which will secure £2,000, while a further £840 will be distributed among the next five best. The next best prize for height will also be of £2,000, with two other prizes of £400 and £200 respectively. Three prizes of £1,000, £400, and £200 will also be given in the speed contest, and for the longest cumulative distance flown, while a prize of £400 will go to the aviator who flies in the strongest wind. In the passenger competition there will be four prizes of £400, £200, £120, and £80, respectively. In addition to these, three prizes of £40 each will be given each day for the greatest height, longest distance, and best speed of the day.

Curtiss Flyer for Cairo.

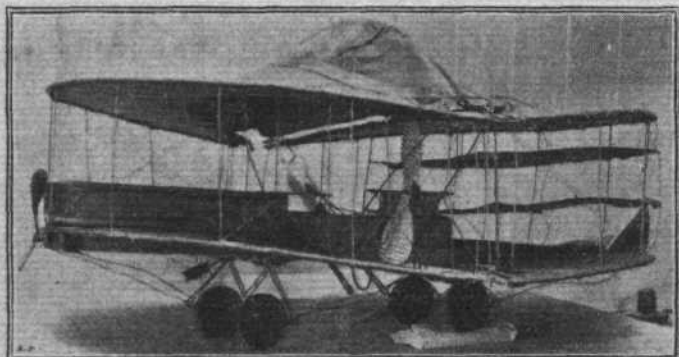
A CABLEGRAM from New York announces that the Curtiss aeroplane which won the Gordon-Bennett Trophy at Rheims is being sent to Cairo to take part in the meeting to be held there next February.

Bleriot and Wright Schools at Pau.

ON the 24th ult., M., accompanied by Mme. Bleriot, visited Pau with the object of arranging for the instruction of some of his pupils there, on an aerodrome about 6 kiloms. from that on which Tissandier will be instructing several clients in the use of the Wright machines. Wishing to see M. Tissandier with reference to some business, M. Bleriot took the opportunity on the 26th ult. to pay the call by aeroplane, and both the outward and homeward journeys were made without any trouble. M. Bleriot also carried out several other short flights on various days, as well as MM. Leblanc and Balsan. M. Bleriot returned to Paris on Sunday, leaving M. Leblanc in charge of the pupils Grapperon and Barretau.

On Sunday M. Bleriot was busy tuning up the "White Eagle," a two-passenger monoplane which has been purchased by Mr. Grahame-White. Accompanied by its owner, M. Bleriot made two flights of about 5 kiloms. each, and in the afternoon he was aloft for 8 minutes. The following day M. Bleriot twice paid visits by aeroplane to M. Tissandier, and in the afternoon, for the first time, gave an exhibition of gliding flight, stopping his motor when at a height of 100 metres and gliding down. These manoeuvres were all carried out on the cross-Channel type of machine, but he also continued the tuition of Mr. Grahame-White on the "White Eagle." Leblanc also made a short trip of 5 kiloms.

On December 7th M. Bleriot is due at Constantinople to fulfil an engagement to give exhibition flights.



Model Aeroplane constructed by Messrs. Mortimer and Vaughan to illustrate a full-sized flyer which they are building.

Bleriot at Issy.

M. BLERIOU was busy at Issy on the 23rd ult. testing a couple of passenger machines for MM. de Lesseps and Malingaux. With one machine M. Bleriot, accompanied by M. Leblanc, flew round the course five or six times, while on the other machines he repeatedly described a figure "8." The machines were then taken possession of by their owners, who contented themselves by running along the ground.

Sheds for Flyers.

MR. W. HARBROW (of South Bermondsey Station, S.E.) has issued a useful circular notifying his capacity for the erection of aeroplane sheds. Some standard sizes at popular prices are quoted, and the style of building can be gathered from accompanying illustrations of "The Street" at Shellbeach, &c., which is the work of the firm.

Aviation Picture Postcards.

SEVERAL readers are inquiring for picture postcards relating to aviation subjects, especially flyers in motion. If any publishers make a speciality of these, we shall be glad to hear from them. One correspondent specially asks for the addresses, in this connection, of MM. Levy Fils ("L. F." cards) and C. Malcint ("C. M." cards).

Another Address Wanted.

MR. R. MURIE has addressed a request for catalogue and particulars of aeroplanes to one of our advertisers but has omitted to give his address. We shall be pleased to have this sent on for forwarding.



CORRESPONDENCE.

* * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

NOTICE.—Correspondents asking questions relating to articles which they have read in FLIGHT, would much facilitate our work of reference by kindly indicating the volume and page in their letters.

CORD FOR LARGE KITES.

To the Editor of FLIGHT.

SIR,—I have some large kites, which I make myself, and find to be very good flyers; this was an unknown sport here till I took it up. Some of them are 20 ft. wide; where can I procure strong cord to hold a kite with over 140 sq. ft. surface? Also for smaller ones 30 and 70 sq. ft. I buy rope here, and it twists the leading cords coming from the kite, and so puts them out of proper angle. My large one will raise a man easily on a wind 1½ lbs. to the foot. How do I attach the carrying chair to the holding rope, or to a rope suspended from the kite? Can you recommend me a good book on the subject?

Yours faithfully,
M. J. CARROLL.

VARNISHED FABRIC—AN ENQUIRY.

To the Editor of FLIGHT.

SIR,—Could you, or any reader, inform me of the best and cheapest way of making ordinary calico airtight, by varnishing or glazing same, without increasing the weight very much? It is for covering a 4 ft. biplane model of the Farman type, therefore do not want too heavy covering. Wishing you every success,

I remain, yours faithfully,
Balham. E. PHILLIPS.

SOARING EAGLES IN ENGLAND.

To the Editor of FLIGHT.

SIR,—Whilst piloting a balloon last Saturday over Kent, I was surprised to see a large eagle soaring about in the neighbourhood of the balloon at a height of about 2,000 ft., and roughly 500 yards away from us. My two passengers, Mr. Alban J. Roberts, and my brother, Mr. H. M. Maitland, were watching it closely through

AIRSHIPS AND BALLOONS.

The British Naval Dirigible.

AT last some external evidence that progress is being made with regard to the big naval dirigible under construction at Barrow is shown by the fact that the huge shed which is to house it is now beginning to assume shape. Last week the first arch was erected, and the work will now proceed with all speed. The dirigible is to be ready for trials by the end of February.

New Willows Dirigible.

AS soon as the weather conditions are favourable Mr. E. T. Willows, of Cardiff, hopes to make a long flight with his new dirigible, which is at present housed in the big shed on Splott Moors. The envelope is of the usual cigar-shape, and is 86 feet in length and 22 feet in diameter. Steering is effected by a large rudder having an area of 56 square feet, while the propeller is driven by a 30-h.p. engine.

Gordon-Bennett Balloon Race.

AT last the Swiss Aero Club appear to have come to a definite decision regarding the result of the Gordon-Bennett Balloon Race. First place has been awarded to the "America II," piloted by Mr. Mix, while Switzerland secured the next two positions, Capt. Messner's "Azura" being placed second and Col. Shaeck's "Helvetia" third. M. Leblanc, who was in charge of the "Ile de France," and covered the second longest distance, has been disqualified. At the moment of landing the balloon disappeared and was not seen again.

Zeiss glasses, and as far as they could see it did not appear to move its wings in the slightest; they made a sharp dihedral angle. It looked exactly like an Antoinette monoplane in the distance; it was most interesting.

Another rather interesting incident, which is perhaps the best object-lesson as to the different air-currents which exist at different altitudes, was this:—Our balloon was at 3,000 ft. Another balloon, about five miles to the north of us, appeared to be at about 2,000 ft. Slowly the two balloons converged towards one another, until the other balloon was directly underneath us; we then gradually separated until lost to sight.

Though only about 1,000 ft. difference in altitude, we were travelling in exactly opposite directions.

I am, yours faithfully,
E. M. MAITLAND, Captain, the Essex Regiment.
P.S.—An eagle was shot at Sundridge, where we landed, about ten months previously. E. M. M.

FLIGHT IN NATAL.

To the Editor of FLIGHT.

SIR,—FLIGHT reaches me regularly in this somewhat out of the way corner of the globe, where the art of flying would be particularly useful. There are no roads worthy of the name, and five miles an hour on horseback is a fair average over many of the tracks I have to follow.

There would be plenty of scope for the intrepid glider in these parts, and if a "jump off" were made from any of the hill-tops around here, the glider would find himself a thousand feet or so above the ground in something less than two minutes.

I am afraid, however, that, in spite of the wonderful strides that have been made in practical aviation, before the flyer has been brought to such a state of perfection that it will safely cope with the upward, downward and sideways currents of air which must be caused by these hills and dales, it will not be necessary for me to move from one particular and sacred spot.

I have been much interested in the articles referring to the flight of birds, and have frequently and carefully watched with a pair of field glasses the common grey hawk of this country when in search of prey. By getting it against a background of a tall tree or mountainside, it can be seen to remain absolutely stationary for periods of from 5 to 30 secs. even in quite a stiff and irregular breeze, while its wings flutter or are almost still according to the gusts of wind.

This power seems to me to be quite inexplicable, and is like trying to keep a boat stationary in a rapid with only one point ashore to take a bearing from.

Certain species of flies also seem to have this power and will remain stationary *relative to a moving object*, such as a horse, and then dart off with great rapidity to a new position a foot or so away from the first, and again become fixed, apparently, while their wings are rapidly buzzing all the time.

It is so long since I was in the Old Country that I forget if the hawks there do the same as I have described, but I think they do.

Can any of your scientific contributors explain this phenomenon?

Yours, &c.,

Richmond, Natal.

HERBERT G. DEMPSTER.

[Soaring, which implies the extraction of energy from the atmosphere for the purpose of sustentation, is possible either in a wind of upward trend or a wind of varying intensity. In the first case, which is the simpler of the two, the oblique force has two components: one, which is vertical, supports the bird aloft; the other, which is horizontal, provides a horizontal force of propulsion. Flight is relative to the air, and when this horizontal forward thrust is only sufficient to neutralise the drift, the phenomenon of stationary (relative to earth) flight results.—ED.]

SPRUCE SPARS.

To the Editor of FLIGHT.

SIR,—I intend to build a monoplane with double-surfaced wings, each 17 ft. span and 7 ft. chord.

I note what you wrote on p. 332 (June 5th), and should be obliged if you could inform me what thickness and dimensions of spruce it would be advisable to use for each spar, and what, approximately, would each such spar weigh?

Could bamboo be substituted with any great advantage as to weight? I have noted the article "Constructional Details" (FLIGHT, November 13th), but do not understand how the piano-wire is got through the centre of the nodes of the bamboo on a spar of any length.

Thanking you in anticipation of a reply,
Folkestone.

F. M.

[It is not easy to find in advance the minimum dimensions for a spar, for even though calculations can be made for an assumed strength of wood, it is more satisfactory in the beginning to be guided by some simple tests. Starting with a spar of say, 2 ins. by 1½ ins. section, load it with a weight equivalent as near as possible to that which it will sustain in flight, and observe if the deflection is likely to be excessive.

The primary advantage of bamboo is that it forms a ready-made spar; it is not necessarily lighter unless the "ready-made" size is also the minimum permissible.—ED.]

PERFECT PROPELLERS.

To the Editor of FLIGHT.

SIR,—One of your correspondents, Mr. Levermore, speaks in your issue of November 13th of perfect propellers. Can you state what measurements, &c., have to be allowed for to design a 9 in. tractor screw? Perhaps Mr. Levermore could give some suggestions. Trusting you will have room for this in your excellent paper,
Canterbury.

TRACTOR.

PRACTICAL AND EFFICIENT PROPELLERS.

To the Editor of FLIGHT.

DEAR SIR,—As specialists in the design and manufacture of high-speed propellers you will perhaps allow us to suggest to your correspondent Edgar E. Wilson that he is on the wrong track in imagining that an elastic or "plastic" blade of a revolving propeller is superior in efficiency to the rigid blade. If he will go through his Pettigrew "Animal Locomotion" again he will find the Professor only asserts high efficiency in the bird's wing or the fish tail when it *reciprocates*. As a matter of fact, we ourselves have proven to demonstration that an elastic-bladed revolving screw is much inferior in efficiency to the rigid one, the reason being very palpable. Almost immediately the observer notes the alteration in form of the driving face of the blade or blades when driven at

moderate speed. A properly-designed rigid propeller of variable pitch will be found in practice to be fully 20 per cent. more efficient than the best elastic- or "plastic"-bladed propeller made.

We have been privileged to advise some prominent flyers in regard to their propellers. The same practice that has held good during recent years in high-speed torpedoes and torpedo craft, motor boats, and hydroplanes holds good for aeroplanes.

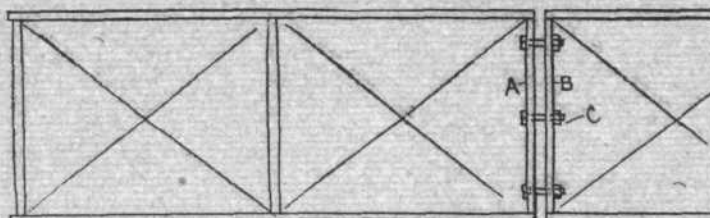
Yours faithfully,

D. RAMSAY SMITH AND CO.

DETACHABLE SPARS.

To the Editor of FLIGHT.

SIR,—No doubt the readers of FLIGHT who anticipate building a biplane, would be pleased of a suggestion for joining up their main



Main strut, A B, is made in halves and must fit exactly. Holes are bored for the bolts, C, which when pulled up make the planes continuous. The end ribs are halved the same as the struts, so that the planes themselves are detachable.

planes. I have enclosed sketch, which may be of use.

Yours truly,

Wandsworth.

WALTER YEATMAN.

THE DIHEDRAL ANGLE.

To the Editor of FLIGHT.

SIR,—Having lately read in your excellent paper many solutions to the self-righting properties of the dihedral angle of a monoplane, I think the way to look at it is as follows:—

When the monoplane leaves its symmetrical position in the air,



the pressure resisting the downward fall of each wing equals the resolved part of its surface horizontally.

Let the wing Ox be inclined to the horizontal at an angle, A , and Oy at an angle, B , so that A is less than B , then the resolved part of the surface, Ox horizontally $= Ox \cos A$, and that of $Oy = Oy \cos B$, but since A is less than B , $\cos A$ is greater than $\cos B$, $\therefore Ox \cos A$ is greater than $Oy \cos B$, \therefore the pressure resisting the fall of Ox is greater than that resisting the fall of Oy , i.e., the system tends to right itself.

Yours sincerely,

Canterbury.

J. S. WORTERS.

AUTOMATIC STABILITY.

To the Editor of FLIGHT.

SIR,—In FLIGHT for June 19th you gave Lanchester's equation for stability of aeroplanes, and noted that the absence of a tail destroys automatic stability. Could you oblige by telling me if this implies that a machine with a small fixed plane in front and a large one behind (but no tail proper) is unstable, or would the distance between the centres of these planes replace l in the formula? Also could you tell me if the axis of the propeller, the centre of gravity of the machine, and the centre of pressure of the supporting areas, should be in the same horizontal plane, or would a low centre of gravity add to stability?

Thanking you in anticipation,

Yours truly,

Shooter's Hill.

P. K.

[The automatic stability of a model glider having a fixed leading plane of smaller area than the main plane—which has been demonstrated to exist in the Clarke models—is a problem of some obscurity. Lanchester himself refers to the subject, but at no great length. A suggestion is that the main plane bears the relationship

of tail to the leading plane, which is subjected, by assumption, to a higher intensity of pressure. The idea that a low centre of gravity, situated, pendulum-like, beneath the supporting surface, ought to prove advantageous to stability, is one which has naturally suggested itself to many. Lilienthal, by hanging beneath his glider, was a practical illustration of the principle, and also of its faults. The high inertia of such a system as this interferes with sensitive control.—ED.]

THE EARLY DAYS OF BALLOONING.

To the Editor of FLIGHT.

SIR,—I notice in *FLIGHT* of November 27th a speech made by Mr. Moore-Brabazon at the Authors' Club Dinner, in which he says: "Later on, in 1903, they (Mr. Rolls and myself) started ballooning together, when ballooning was quite a new thing as a pastime. In fact, they commanded one of the first private balloons in this country."

I beg to point out that as long ago as 1878, Colonel (then Captain) James Templer owned a private balloon, in which he took up many people, as a pastime.

The late Walter Powell, M.P. for Malmesbury in 1881, owned a silk balloon with a ripping panel in it, and he and myself owned a cotton balloon.

As so many errors have crept into the history of balloons in this country, I hope you will allow me to correct this slight inaccuracy in Mr. Moore-Brabazon's speech.

Believe me, yours faithfully,

FRANCIS C. TROLLOPE, Lt.-Col.

ELASTIC MOTOR.

To the Editor of FLIGHT.

SIR,—I have constructed an aeroplane on the Bleriot model, and I am in want of a motor. The span of wings is 30 in. by 5½ in. I should like to construct an elastic motor, and I thought that you would probably show in your valuable paper the drawings of such a one as I want. I have constantly read your paper, and I thought that you would oblige, as you constantly put drawings in for the respective parts of aeroplanes.

Respectfully yours,

EDWARD PEZARRO.

[We would refer our correspondent to a sketch which appeared on page 547 on September 4th, as showing an idea for an elastic motor which is a little out of the ordinary.—ED.]

A FINE MODEL.

To the Editor of FLIGHT.

SIR,—I am sending you photo of aeroplane, 2 inches to the foot scale, thinking it may interest you. This machine will run along the ground, and rise in the air, and float on a perfectly even keel. You will notice that the dihedral angle is adapted on the main planes. This machine was made in the early part of the summer, and my own design.

Hayle.

I am, yours faithfully,

J. S. YABSLEY.

POWER AND WEIGHT.

To the Editor of FLIGHT.

SIR,—Kindly pardon liberty, but as a subscriber to your paper I should be glad if you would, through the medium of your columns, enlighten me.

Would you inform me of the lowest horse-power a motor could be to have power enough for driving a small plane, about 15 ft. long, 12 ft. by 4 ft., weight unknown; also what size propeller needed?

Yours, &c.,

AMATEUR.

Paddington.

[It is impossible to estimate the power required without knowing the weight, because the power is essentially a function of weight and speed.—ED.]

To the Editor of FLIGHT.

SIR,—Should consider it a favour if you could inform me whether a monoplane weighing 250 lbs. (including pilot and engines) and having 70 square feet main-plane surface, would be capable of gliding. If not, what dimensions should the two tractor-screws, and what minimum h.p. the engines be to persuade it to fly.

Wishing your paper every success.

Yours sincerely,

"READER."

Manchester.

[The load on a glider of the above dimensions would be approximately 3.6 lbs. to the square foot, an intensity of pressure which it would require a very high speed through the air to produce. Some form of progress could probably be made with a machine of the above mentioned weight by equipping it with a 10-h.p. engine, but we would point out that, after deducting about 150 lbs. for the pilot, the remaining 100 lbs. is an inadequate allowance for such a machine, since even the engine would weigh as much.—ED.]

To the Editor of FLIGHT.

SIR,—I am building a model biplane, the main-planes of which measure 74 ins. by 18 ins. I intend to drive the machine by two 15-in. propellers, geared to a ½-h.p. motor. Could you, or one of the readers of your excellent paper, tell me the greatest weight the machine can be for it to fly.

Thanking you in anticipation.

Yours truly,

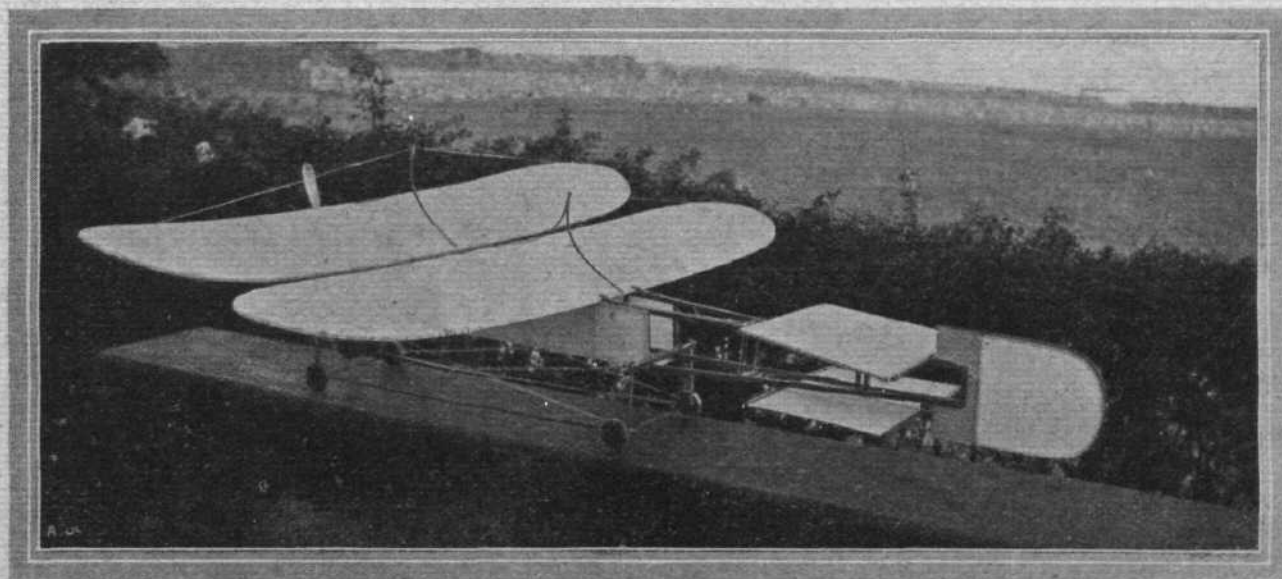
DONTON.

Courtenay.

GNOME ENGINE.

To the Editor of FLIGHT.

SIR,—Could you or any reader of your excellent paper tell me the reason for the peculiar position of the "Gnome" motor behind the propeller on the Farman flyer? In descriptions of this rotary engine, reference is made to a single cam-shaft with seven cams actuating the valves of all the cylinders, so that this shaft must be concentric with the crank-shaft. If it is not a hollow shaft outside the stationary crank-shaft (and I have never seen it mentioned as such), it would have to be on the opposite side of the engine to this shaft, i.e., behind the engine, where it would, of course, prevent the revolving engine being connected to any rotating propeller-shaft. Am I right in supposing this to be the reason for connecting the



Mr. J. S. Yabsley's 2 ins. to the foot scale aeroplane.

propeller direct to the revolving cylinders without any intermediate driving-shaft?

Wishing your paper continued success.

Yours faithfully,
Wimbledon. B. BRUCE-WALKER.

[Two advantages may be suggested in connection with the position of the propeller on the Gnome engine. It does not interfere with free access to the motor and the draught from it passes straight across the cylinder-heads, which are air-cooled.—ED.]

"C.G. AND C.P."

To the Editor of FLIGHT.

SIR,—Having been constant readers of your valuable journal, FLIGHT, we take this opportunity of asking a few questions. Having had considerable trouble in getting the correct balance of some of our model aeroplanes, we should feel obliged if you could give us any method of locating the centres of gravity and pressure.

Could any of your readers give us answers to the following questions with regard to the making of model aeroplanes:—

1. Which is the best way to construct the planes?
2. The best way of fixing together so as to be taken apart easily?
3. The best way of designing a model propeller?

We remain, yours faithfully,

"GRAVITY AND PRESSURE."

[A method of locating the centre of gravity would be to balance the model on the end of a fine thread. In gliding flight, if the nose tips upwards then centre of pressure is in advance and *vice versa*.—ED.]

STRONGER PETROL TINS.

To the Editor of FLIGHT.

SIR,—Complaints have been voiced by motorists frequently of leaky petrol cans and consequent short measure. Considering the enormous number of spirit cans in use, we are of the opinion that the number of leaky cans is infinitesimal.

We venture to suggest that if users would handle the cans with a little more care and consideration, it would help the importers and distributors very materially. It is no infrequent occurrence for cans to be received back with the bottom seam twisted out of shape and rent open, this being the result of the practice of opening the faucet of one can with the bottom edge of another. This practice prevails to such an extent that for some time past for all our new cans we have adopted the method of strengthening the bottom seams by reinforcing same with a strip of stout metal, and other firms have also since seen the necessity of doing likewise.

In regard to the question of short measure, if users could see the precautions that are taken by ourselves, as well as other distributors, by providing automatic filling machines, passed by the Inspector of Weights and Measures, they would feel, as we do, that every precaution that human ingenuity can at present devise has been adopted.

We would also like to state that the practice of using motor spirit cans as storage receptacles for water, &c., from our experience seems to be largely on the increase, and a moment's reflection will make it apparent how injurious is the practice of using cans for other than the purpose for which they are intended.

Yours truly,
ANGLO-AMERICAN OIL CO., LTD.

FARMAN AND VOISIN MACHINES.

To the Editor of FLIGHT.

SIR,—With reference to your article, entitled "Mr. Farman and the Voisin Frères," I notice that Farman claims to have obtained his first successes on a machine "*qu'il avait complètement remanié ou fait remanier selon ses indications.*" (*Revue Aérienne*).

This is obviously at least very much exaggerated, as the "Delafrange No. 1," which was ordered before the "Farman No. 1," differs from the latter only by the "castor" or "orientable" arrangement of the wheels, and from the "Farman No. 1 bis" (which won the circular kilom. prize) only by the former detail and the monoplane elevator.

It was only later that Farman began the alterations which led to the present type.

Hoping you will publish this, and excuse my occupying so much of your valuable time.

Yours truly,
H. D'ERLANGER.

PUBLICATION RECEIVED.

All the World's Airships (Aeroplanes and Dirigibles). By Fred T. Jane. First Annual Issue. London: Sampson Low, Marston and Co., Ltd. Price 21s. net.



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SEVERAL back numbers are now becoming **very scarce**, and when exhausted no more complete sets will be procurable.

The publishers have pleasure in announcing that they have secured a few of these back issues of FLIGHT, and any of our new readers who may wish for sets, No. 1 to date, except Nos. 2, 3, 4, 6, 8, 10, 12, 15, and 16, but including the numbers containing full description and Scale Drawings of the Bleriot, Curtiss, Voisin, and Cody biplanes, the Wright full-size glider, and of Santos Dumont's "Demoiselle" monoplane; can obtain same for 6s. 11d., post free (abroad 8s. 7d.).

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The publishers have only a limited reserve stock for bound volumes at end of year. Those wishing, therefore, to ensure obtaining Volume I complete for year 1909—ready end of January—with Index and Title Page, can book same now at the price of 25s., bound in cloth boards. Orders will be booked for these in rotation as received. *As various numbers become scarce* the price will be raised accordingly.

We have now been able to secure a very few copies of No. 16, and can supply same at 3s. 6d. each.

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NO ALTERATIONS can be made after **10 a.m. THURSDAYS**.